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# A
# TREATISE
# ON
# FORCING FRUIT-TREES.

[Price THREE SHILLINGS.]

BRITISH MUSEUM

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4 8cc

# A
# TREATISE
## ON THE MANAGEMENT OF
## PEACH AND NECTARINE TREES;
EITHER IN
## FORCING-HOUSES,
OR ON
## HOT AND COMMON WALLS.
CONTAINING
An Effectual and Eaſy METHOD of preventing
them from being infected with any Species
of INSECTS.
ALSO
DIRECTIONS for Conſtructing proper FORCING-
HOUSES and HOT-WALLS.

BY

**THOMAS KYLE,** K.
GARDENER TO THE HONOURABLE BARON STEUART
OF MOREDUN.

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MVSEVM
BRITAN
NICVM

TO THE HONOURABLE

**DAVID STEUART-MONCREIFFE**
of Moredun, Eſq;

ONE OF THE BARONS OF HIS MAJESTY'S
EXCHEQUER IN SCOTLAND.

SIR,

Sensible that any new diſcovery in the ſcience of Gardening has been greatly promoted here by your knowledge, and that your liberality in every point has much encouraged me in purſuing the various branches of my buſineſs in your ſervice; with the more confidence I humbly beg leave to dedicate the following Treatiſe on the forcing of Peaches, &c. to you. I am, with the utmoſt reſpect and gratitude,

SIR,

Your dutiful Servant,

THOMAS KYLE.

MOREDUN,
Nov. 1783.

# CONTENTS.

**Chap. I.** *On the conſtruction of a forcing-houſe for early Peaches and Nectarines.* 9

**Chap. II.** *On the management of early forced Peach and Nectarine trees, &c.* 19

**Chap. III.** *On keeping the Peach and Nectarine trees free of all inſects, that they are liable to be infected with.* 56

**Chap. IV.** *On a forcing-houſe with the flues all in the back-wall, and the ma-*

*management of late Peaches and Nectarines.* 66

Chap. V. *On the conſtruction of Hot-walls, and the management of the trees without glaſs.* 76

Chap. VI. *On forcing Peaches, Nectarines, &c. without flues in the back, and keeping thoſe on common walls free of inſects.* 90

Chap. VII. *On Vines.* 99

# A
# TREATISE
# ON
# Forcing PEACHES, *&c.*

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## CHAP. I.

### *On the Conſtruction of a Forcing-Houſe for early Peaches and Nectarines.*

A FORCING Houſe or Frame for Peaches, Nectarines, &c. (if intended to have ripe fruit ſo early as the firſt of May), ſhould be forty-five feet in length to one fire; *i. e.* a forcing-houſe ninety feet long ought to have two furnaces placed behind the middle of the back-wall, three feet apart from one another, and covered with one ſhade. This back-wall ſhould be eleven feet ſix inches high, and two feet ſeven inches thick, including eight inches and an half for the width of the flues.

THE breadth of this forcing-houſe ſhould be ſeven feet, between the back and front wall; which ought to be one foot two inches in height above the border inſide.

THE flues ought to be conſtructed in the following manner——They ſhould be brought ſtraight from the furnaces, acroſs and below the ſurface of the border, to within four inches of the front-wall; when they muſt be raiſed above it, and built on the ſurface, leaving a ſpace of four inches between them and the front-wall.

THESE front-flues ſhould be brought into the back-wall, by croſſing the border at each end of the forcing-houſe, and run twice along it: the firſt flue in the back ſhould be three feet deep, eight inches and an half wide, and two feet and an half above the border: the ſecond or uppermoſt two feet and an half deep, the ſame in width with the bottom one. Between theſe two flues, there ought to be three courſes of bricks beſides the covers.

The flues along the front ſhould not be conſtructed before the other parts of the building are finiſhed, and the whole done to the ſaſhes putting on: if they are built ſooner, lay boards along them, to prevent the covers being broke by the carpenters when erecting the wood-work. They ſhould be conſtructed in the following manner—Where they croſs the border from the furnaces, let them be ſo low, as, when covered ſix inches thick, the tops of them may be no higher than the ſurface of the earth; without this thick covering, the heat would ariſe too ſtrong in that part, when briſk fires are uſed. It is unneceſſary to have the earth on which theſe light buildings are placed, made more ſolid than by a man treading it once over; which done, and the ſurface made ſmooth, lay the bottom of theſe flues entirely upon the top of the border, with thin flag-ſtones, or pavement bricks, one foot four inches in length, which will make their foundations of a proper breadth, viz. ſeven inches for flue, and nine for the brick work. They ſhould be built with ſtock-bricks; if not, well ſhaped common ones. Four courſes of them laid in bed, will make the flues about eleven inches deep, which is ſufficient. They ought to be covered with pavement bricks one foot four inches in length: Theſe covers ſhould not exceed two inches in thickneſs, and not be leſs than one inch and three fourths. Neither front nor back flues ought to be plaſtered.

Of late years, it has been recommended as a great improvement, to have the furnaces placed in front of all forcing-houſes; which is now a good deal in practice. A peach-houſe thirteen feet wide, the ſame in height, and an hundred feet long, would require to have furnaces both in back and front, with a flue to run along the middle of it: but in one ſeven, or even if it was nine feet broad, it is more proper to place the furnaces behind as directed; which is far more convenient, and anſwers the ſame purpoſe; the walk in front alſo being all of a-piece, will be more agreeable to the eye.

THE wood-work of this forcing-houſe ſhould be thus conſtructed—Upon the front-wall place three feet four inches in height of upright ſaſhes, including the top and bottom beam in front. The upright and ſlope ſaſhes ſhould be three feet two inches broad: the latter in one length without ropes and pulleys, but ſo as one perſon can move them up and down with eaſe from the outſide. The upright ones may be fixed with three ſmall hooks withinſide; but not made in the method of ſliding paſt one another, for the purpoſe of giving air: In a forcing-houſe of the breadth mentioned, viz. ſeven feet, or even if it was two or three feet wider, the top is the moſt proper part for the admiſſion of air.

If the houſe is ninety feet in length, it ſhould be divided acroſs the middle by a ſaſh-door and partition; that one part may be forced ſome time before the other, in order to continue the fruit longer.

The trellis for training the trees upon, ſhould be made in the following manner——Fix a bar of wood one inch and a half thick, and three inches broad, to the back wall, horizontally, and eight inches above the ſurface of the border: about five feet above this fix a horizontal bar to the ſolid building between the two flues; this ought to be two inches broad, the ſame in thickneſs with the bottom one. The beam of wood on the top of the wall to which the rafters are fixed, ſhould project over the face of it about one inch: to which beam and the two horizontal bars, (their narrow ſides next the wall), fix erect bars, one inch broad and half an inch thick; placing their broad ſides next to the horizontal ones, and four inches and an half ſeparate. This trellis is is more ſuitable for training the trees upon, than the method commonly practiſed of having the ſmall bars placed horizontally.

## CHAP. II.

### *On the Management of early forced Peach and Nectarine Trees, &c.*

THE border for the trees ſhould be made of pretty ſtrong freſh loam, taken from rich old paſture-ground, ſix or ſeven months before it is brought into the forcing-houſe, that the turf may be rotten. To each cart-load of the above, add three wheel-barrowfuls of good old hot-bed dung. The whole ought to be well mixed, by turning and throwing it in heaps.

Eighteen or twenty inches will be a ſufficient depth for the border.

In order to have a pretty good crop of peaches and nectarines the firſt year of forcing, plant three trees in one diviſion of the houſe that have produced fruit for a few years, and of the kinds that are known to be good, whoſe branches are extended ten or twelve feet, not above eight or nine years old, and free of canker and mildew; ſuch trees can only be removed a ſhort diſtance with ſafety: if they are in the ſame garden in which they are to be forced, ſo much the better. They muſt be prepared for the forcing-houſe in the following manner.

ABOUT a twelvemonth before it is intended to remove them, *i. e.* in November or December, dig a ſemicircular trench about three feet from each of their ſtems; make it about two feet broad, that there may be room to get below the roots that extend to it; and make the ends of them ſmooth with a knife after they are cut by the ſpade.

IF the ground is not mellow and rich, with an inſtrument that will not hurt the roots, clear away ſo much of the earth as to leave three or four inches of the ends of them, and fill the trench immediately with freſh mould. This prepares the trees for removal with ſafety; as many ſmall fibres will be produced from the ends of the roots that were cut, which will be of great ſervice to the trees when planted. If they were not pruned before, do it now in the following manner: If they are rather luxuriant than otherwiſe, thin the wood ſo, as when it is nailed to the wall, the ſhoots may be about nine inches ſeparate; if they are middling as to ſtrength, let the ſhoots be placed about ten or eleven inches ſeparate: ſhorten none of them at this time; only thin them as directed, and in ſuch a way that the trees may produce a regular ſupply of bearing wood.

In the month of February or March following, (according to the forwardneſs or lateneſs of the trees beginning to puſh), give them their ſpring pruning, by ſhortening the ſhoots. Cut always at a bold wood bud, which is eaſily known by the time the petals (commonly called *flower-leaves*) begin to appear; this being the moſt proper ſeaſon for performing ſuch pruning of peach and nectarine trees.

From ſuch of laſt year's ſhoots as are pretty ſtrong, cut off about one third, and from weaker ones about the half of their length.

FROM weak ſhoots of laſt year, ſuffer only one to be produced; and from others no more than two. Rub off all others before they have time to expand their leaves.

REGARD muſt be paid to have the trees properly furniſhed with bearing wood, and only to ſuffer a few fruit to be produced this ſeaſon.

IT will probably happen that they will produce fruitful ſpurs, let them remain till the following ſpring-pruning.

THESE trees muſt be often looked over, and but a very few more ſhoots allowed to be produced than what ſhould be left for the firſt year of forcing.

WHERE two ſhoots are left on one of laſt year's, let the loweſt be as far from the leading one as can be got pretty ſtrong. Train the young wood to the wall in regular order as it advances.

THE middle of November is a proper time to bring theſe trees into the forcing-houſe; but before they are taken up, let the pits in it be ready for their reception. If the bottom is clay, there muſt be flag-ſtones about a yard ſquare laid below every tree, to prevent the roots going deeper than the earth prepared for them: if they were to get lower, the trees would canker; likewiſe the fruit would not be ſo well flavoured. But whatever the bottom is, it is a good method to lay flags; or, if theſe cannot be procured conveniently, ſlates or tiles, with their edges laid over one another, will anſwer the ſame purpoſe; as the beſt flavoured fruit are produced from trees whoſe roots are near the ſurface.

Avoid taking them up in ſunſhine and wind, as the young fibres would ſuffer if a ſhort time expoſed thereto.

In removing theſe trees, dig a ſemicircular trench about a foot farther from them than where the roots were cut at, and clear the earth away ſo as to get under them all: trees of the ſize mentioned cannot be moved with balls of earth; but it is neceſſary to have them taken up with the whole of their roots as entire as poſſible. From thoſe that were cut the preceding year many ſmall fibres will be produced; ſpread theſe carefully in the pit when planting.

Plant them rather ſhallow than

otherwiſe, and immediately give them a good watering with the roſe on the pan: this will ſettle the earth among the roots.

LAY boards to ſtand on, that the earth may not be trode; and tie the trees to the trellis ſoon after they are planted, to prevent the ſhoots being broke by the wind, which ſhoots ſhould be placed ſix or ſeven inches ſeparate.

IF there is a little wood to ſpare (as moſt likely there will), cut out the weakeſt ſhoots, and ſuch as are only furniſhed with ſingle buds, (*i. e.* flower-buds without leaf or wood ones at their foot-ſtalks), as the fruit of ſuch ſhoots are moſt liable to drop before they come to maturity.

If ſuch trees as the three mentioned for producing fruit the firſt year of forcing, cannot be procured conveniently for the other diviſion of the houſe, plant five young, ſtrong, trained trees, about three or four years old from the bud, and free of mildew or canker.

Plant and water them as the others: which done, cut out the weakeſt ſhoots, and tie the others to the trellis: if they are vigorous, place them about eight or nine inches ſeparate;

rate; if middling as to ſtrength, about ten. The ſecond and fourth tree muſt be taken away when there is not room to continue them longer: before that time they will have produced fruit much above their value when planted.

When the ſhoots are all tied to the trellis, take away the boards, and dig the border from end to end: leave it rough and open till the ſaſhes are put on. Care muſt be taken not to touch the roots with the ſpade at this time, as it would do more hurt to the trees when new planted, than after they have been a year or two eſtabliſhed.

In the laſt week of January make the border level and ſmooth in both diviſions. Lay a wooden walk the whole length, ſixteen inches broad, one foot and an half from the back wall, and in ſuch lengths as can be moved conveniently, made of deals five inches broad and two inches thick, leaving about half an inch of an opening between them, that air and moiſture may not be too much excluded from the earth below the walk. There ſhould be two bricks laid acroſs and below it, about five feet diſtant, to keep it juſt clear of the earth.

At ſame time, put the ſaſhes on

both diviſions, and give air in ſunſhine weather.

In the firſt week of February apply the fire-heat to the diviſion that is planted with trees prepared for producing fruit the firſt year of forcing; and about eighteen days after, to the other.

From the time the forcing is begun, till the fruit are about the ſize of peaſe, keep the mercury in Farenheit's thermometer about the point 55° with fire-heat. From the time that the fruit are of the ſize mentioned, increaſe it by degrees to 60°, and keep it as near to that point as can be done. With ſun-heat in winter to the middle of February, keep it about 60°; increaſe it gradually to 70°: in ſummer it ought not to exceed 80°, and but ſeldom ſhould get to that height.

The proper time to ſhorten the ſhoots is when the petals begin to appear. Cut always at a bold wood-bud, (which by this time is eaſily known,) taking away about one third of the length of laſt year's ſhoots in general, in the firſt year of forcing.

If there are any that have no wood or leading bud but the one at the end of the ſhoot, ſuch ought not to be ſhortened, otherwiſe the fruit on them would be loſt; if they ſhould remain and ripen, they would have no flavour: but ſuch ſhoots as theſe that are ſhortened, commonly die before the fruit are ripe; ſo if there are any to ſpare, ſuch ſhould be cut out.

If plenty of bloſſom is appearing, leave only a few of the ſpurs that were produced laſt ſeaſon.

If it was favourable, with a fine autumn, and the trees brought from a warm ſituation, the wood will be ripened, and the bloſſoms ſtrong. From ſuch trees a good crop will be produced if they are managed according to the preceding and following directions.

From the ſtrongeſt laſt year's ſhoots, ſuffer only two to be produced; from others, only one; all others ſhould be rubbed off as they appear: only ſuch as are produced at the foot-ſtalks of the fruit ſhould remain till they have got ſix or ſeven leaves; then pinch their tops, by taking off ſo much as to leave four or five; as they puſh anew, cut the young part off at the ſame place.

When any of the ſhoots are too vigorous, (*i. e.* the ſame year's wood puſhing out ſhoots), take off thoſe that are not properly placed for training to the trellis, ſtop the ſtrong leading ſhoot, and train two or more of the ſide ones to it according to their ſtrength; and the following ſeaſon they will bear fruit, whereas the one they are produced from would have none.

TRAIN the young ſhoots that are to remain, in regular order to the trellis as they advance.

WHEN the fruit are about the ſize of horſe-beans, begin to thin them where they are too thick; but let this be done ſparingly at firſt: many come off of themſelves before they arrive at that ſize, and part will drop while ſtoning, and have been about three weeks at a ſtop in ſwelling. The firſt year of forcing, there may be left about a dozen to the ſquare yard on the trees. Every year after the firſt as follows: on a vigorous tree, eighteen or twenty at moſt to the ſquare yard; on trees that are middling ſtrong, fourteen or ſixteen at moſt; and on weaker trees in proportion.

But it is neceſſary to obſerve, that trees which have been forced ſome years, will produce their flowers in ſuch abundance, as to have ſix or ſeven in a cluſter: when that is the caſe, cut the weakeſt fruit (when ſet) through the middle with a pair of narrow-pointed ſciſſars; the remaining part will ſoon decay; and by this method of thinning them, the footſtalks of thoſe that are left will not be wounded.

THE peach and nectarine are of the claſs Icoſandria, and the order Monogynia, (which contains moſt of the eatable fruits); the flowers are hermaphrodite, with about twenty ſtamina or male parts, and one piſtillum or female organ. It ſometimes happens, but very rarely, that there are two female organs in one flower: when that is the caſe, the peach or nectarine has two ſtones, and looks like two grown together.

When too great a number of fruit is left on the trees to ripen, they will be ſmall, and not ſo well flavoured: the trees alſo will not have ſufficient ſtrength for producing a good crop next ſeaſon.

When the fruit are near about ripe, cut off ſuch leaves (allowing a little of their foot-ſtalk to remain) as entirely exclude any of them from the ſun; but no more than what is neceſſary for a ſmall part of the fruit to receive the rays ſome time of the day: this will cauſe them to be more beautiful,

tiful, and rather adds to their flavour: if many of the leaves were taken off, it would hurt both the trees and fruit.

When they begin to ripen, gather a quantity of clean moſs, (which in moſt places is not difficult to come at, being too common), and ſpread it below the trees two or three inches thick, and eighteen inches broad: this will prevent any of the ripe fruit that drop from being bruiſed.

After the crop is all gathered, let the trees receive the ſhowers that may fall by pulling down the ſaſhes; ſhut them cloſe in the evening, and make a little fire if the weather is cold and dark, till the trees have finiſhed their growth.

When the leaves are decaying, go over them lightly with a beſom at different times, in order to bring off ſuch of them as part eaſily from the wood, that the ſun and air may more freely get to the ſhoots; as air, heat, and moiſture, prepare and ripen them for the following ſeaſon.

If the wood is not ripened before it is expoſed to the inclemency of the weather, there will be but a poor crop the following year: although there may be a good deal of bloſſom, the parts of fructification will be ſo weak, as to die away in general without producing fruit.

If the bottom of the border is of a cold clayey nature, the trees will be a conſiderable time longer in ripening their wood, than if it was ſand or gravel.

However, it muſt be obſerved not to force them into flower in the autumn. I have known flowers, and ſome fruit about the ſize of a filbert-nut, produced early in September, by keeping up too ſtrong a heat to ripen the wood: when that is the caſe, the trees receive hurt, and will not bear a good regular crop the following year.

When the leaves are all or moſtly dropt from the trees, take off the ſloping ſaſhes, and lay them away, that the trees and border may be expoſed to the weather.

Now is the proper time to give the trees their autumn pruning, by cutting out the weakeſt ſhoots, and any old branches that it is found neceſſary to take away: tie the ſhoots to the trellis from ſix to eight inches ſeparate, and at that diſtance every year after the firſt of forcing; and ſhorten them when the petals begin to appear.

It frequently happens, that ſome forced trees ſhoot too luxuriantly for the production of fruit. In order to bring ſuch trees to a bearing ſtate, cut out a few of the ſtrongeſt ſhoots, when the treees have finiſhed their growth: at ſame time, cut ſeveral or moſt of their large roots, to within three feet of the trees, if the branches are extended ten or twelve feet; and according as they are larger or ſmaller, cut the roots farther from, or nearer their ſtems: and the following year they will be well furniſhed with fruitful wood.

When the trees have got their autumn dreſſing, clear the border of the leaves, &c. and lay away the wooden walks.

This is a ſuitable time to clean the flues. If coals are uſed, the flues of this early forced-houſe muſt be cleanſed once in the year, the front one in particular: if wood is uſed, they will not need cleaning above once in three or four years: however, all flues ought to be cleaned before they appear to have much occaſion for it; for the cleaner they are, they require the leſs fire.

When the flues are cleaned, dig

the border without diſturbing the roots of the trees, leave it rough and open, that the froſts may have the more effect on the ſoil.

THOSE trees which have been one year forced and prepared as directed, will be in a good condition for forcing early the ſecond year after they are planted.

WHERE it is required to have ripe fruit by the tenth day of May, put the ſaſhes on the 20th of December, and apply the fire-heat at the ſame time.

WHERE the extent of the forcing-houſe is ninety feet, and ripe fruit not required before the middle of June, the 20th of January is the moſt proper time to light the fire of one diviſion; and in order that the crop of the ſecond may come in for gathering, before that of the firſt is over, apply the fire heat to it, and put on the ſaſhes, the 20th of February: And if ripe fruit are required ſo early as the laſt week of April, apply the fire-heat the 1ſt of December.

In December, January, and February, the weather is commonly ſuch as to occaſion the fires to be kept up not only in the night but alſo through the day: although the ſun ſhould ſhine an hour or two, the fires need not be put out; but give a good deal of air. By continuing the fires, more air can be admitted than otherwiſe could be done.

Trees forced ſo early as the firſt of December; and managed as directed, will have ſtrong fruitful wood for the following year; and their fruit will be ripe before the end of April: but they will not be ſo large, nor ſo well flavoured, as thoſe that ripen two or three weeks later; neither is it to be expected, that the crop will be ſo regular, or in ſuch plenty. However, where there is ſuch extenſive forcing of peaches and nectarines as at Moredun, (the houſe being two hundred and fifty-ſix feet in length, and producing a ſucceſſion of fruit upwards of five months), it is not improper to force the firſt diviſion ſo early as the firſt of December.

THOSE unacquainted with the forcing of peaches and nectarines ſo early as the time juſt mentioned, are commonly of the opinion, that the trees will only continue a few years, if they are forced oftener than every other year. By experience I have reaſon to think, that they will continue as long as thoſe in the natural way, and in more vigour and health than what are to be ſeen on the beſt aſpects and common walls in Scotland and the northern parts of England, if they are managed according to the directions given.

*N. B.* The following peaches and nectarines are the beſt kinds, and moſt eſteemed for forcing; arranged in the order in which they ripen.

PEACHES.

Early Purple,
Montauban,
Royal George,
French Mignon,
Red Magdalene,
Nobleſſe,

Rambouillet, and
Nivette.

### NECTARINES.

Elrouge,
Newington, and
Roman.

WHERE it is required to have roſes, carnations, &c. brought early into flower, there cannot be a more proper place for them, than the early forcing-houſe for peaches, &c. There are no forced plants more liable to be infected with the ſmall green fly, than roſes; and the moſt proper place for them, is over the vacuity between the front glaſs and flue; where they will thrive and be free of vermine.

While the ſteaming ſeaſon continues, there muſt be no pots with plants ſet on the flue: only a row may be placed, as mentioned, above the vacuity, the pots ſtanding on the edge of the flue and wall.

If two or three orange-trees in pots or boxes, not too large, were placed on the border near the front flue, they would thrive finely; and their ſweet-ſmelling flowers, which they produce from the ſame year's wood, would make the forcing-houſe very agreeable. When their fruit are about the ſize of peaſe, the ſmalleſt ought to be cut off, and only one or two at moſt left on one ſhoot.

By keeping the heads of the trees thin of wood, and planting them in a rich, light, freſh compoſt, moſtly made up of earth produced from leaves of trees, they will produce good fruit; but not near the ſize they would grow to if the trees were planted in the border and trained to the trellis; by this method they will flouriſh amazingly, and the fruit grow to a large ſize.

Likewise, if cherry-trees in pots were placed in this early forcing-houſe in the firſt week of December, they would be in full flower early in January; which would be very beautiful: but they will not bear fruit ſo early.

Where cherries are required from the trees in pots, they ought not to be forced before the firſt week of February, and even at that ſeaſon the crop is very uncertain. The trees for this purpoſe ſhould be well eſtabliſhed in the pots, by being at leaſt one year planted in them.

When the ſteaming ſeaſon is over, if two or three rows of ſtrawberry-pots are ſet along the front-flue, they will ſucceed well: if they were placed on the flue ſooner, the ſtrong ſteam would deſtroy the parts of fructification; but if ſet on the border, the ſteam will do the flowers no injury.

The ſcarlet or Virginian and Alpine ſtrawberries, are the proper kinds for forcing. The firſt is moſt eſteemed for flavour, but the crop is ſoon over; the other produces a great deal of fruit, but is much more liable to be infected with vermine than the Virginian.

## CHAP. III.

### *On keeping the Peach and Nectarine Trees free of all Inſects that they are liable to be infected with.*

TO return to the time that the fire-heat is applied, begin to uſe water in the following manner.——When the weather is ſuch as occaſions pretty briſk fires to be kept up, with the watering-pan and roſe on it, ſprinkle a few panfuls of water over the front-flue when it is well warmed, ed, (which a little fire will do), and the houſe is ſhut up. Repeat this five or ſix times together; it will raiſe a thick ſteam, and wet the trees all over; it likewiſe increaſes the heat in the houſe, and greatly promotes the riſing of the ſap. Let this be done in the evening five or ſix times in the week; and at different times through the day, when there is no occaſion to admit air, and the flues are ſo warm as to raiſe the ſteam.

WHEN little or no fire is neceſſary in the day, water the trees all over with the engine in the evening. Soft or rain water is moſt proper for this purpoſe: in cold froſty weather, it ought to be ſix or eight hours in a large tub or ciſtern within the forcing houſe, before the trees are watered with it.

When they are in bloſſom, (if the weather is ſo ſevere as to occaſion the fires to be kept up through the day), fill the houſe with ſteam in the way directed, and raiſe it ſo thick as a man cannot ſee the length of himſelf: this likewiſe promotes the ſetting of the fruit. When it is done three times in the day, the firſt ſhould be as ſoon as the flue is warmed in the morning; the ſecond, about two or three in the afternoon; and the third immediately after the heat of the houſe and flues is examined, and the fires regulated for the night.

When the trees are in bloſſom, and not ſteamed in the way mentioned, give them a gentle watering all over with the engine in the evening, two or three times a-week: this ſhould be like a fine light ſhower, that none of the delicate parts of fructification may be hurt.

Soon after the leaves begin to expand, the *aphis* or ſmall green fly infects them; and ſome time after, a worſe enemy to them, called *acarus* or *red ſpider;* with ſome other ſpecies of inſects.

To prevent the breeding of theſe vermine, continue the ſteaming work, and increaſe the waterings with the engine to five or ſix times in the week.

Trees that are much infected may likewiſe be cleaned by the ſame method: but it is much better to prevent the breeding of the inſects, as all infected trees receive a check in a greater or leſs degree.

I cannot aſſert that this method will in like manner prevent the mildew: but I have often obſerved, that, in the early forced diviſions, where the ſteaming work was longeſt continued, the trees have never ſuffered by it, more than a few leaves in ſome ſeaſons. In the late forced diviſions, ſometimes the trees are more affected with it; but in no greater degree than the extreme parts of a few ſhoots, which I always cut away as ſoon as obſerved.

NOTWITHSTANDING the great encomiums beſtowed upon tobacco-ſmoke for deſtroying the vermine on the peach and nectarine trees, it does not the leaſt injury to the red ſpider. It deſtroys the aphis, where the ſmoke is ſtrong, and confined for a little time: but it requires to be often repeated to keep them at under; which makes the forcing-houſe very diſagreeable to get into: but tobacco-ſmoke does neither good nor hurt to the trees and flowers.

When the fruit are ſet in general, and about the ſize of peaſe, begin to ſpread the water over the trees obliquely, and with more force, that they may be moiſtened all over. Don't begin to water always at one end of the forcing-houſe, as many of the leaves would not be wet; on that account change each time, firſt one end, and then the other. This watering may be performed any time, if the day is dark: in ſunſhine, it is moſt proper to do it when the rays fall obliquely on the front of the houſe, or when the ſun is off it altogether.

When the fruit are beginning to ripen, (which is known by their changing colour), the trees ſhould only be watered two or three times a-week. From the time that the crop is come in for gathering, till it is over or thereabout, give them no water in dull moiſt weather: if it is the reverſe, give them two light waterings a-week in the evening.

The border, for about two feet broad below the trees, will be kept ſufficiently moiſt by the water which falls from them; the other part of it ſhould be kept in a moderately moiſt ſtate, till the fruit are about ripe and in gathering, when it ought to be rather dry than otherwiſe.

FROM the ſmall quantity of water thrown on the trees while the fruit are gathering, and the air of the houſe being rather dry, it is probable the red ſpiders will make their appearance before the crop is over: as ſoon as they are obſerved, water that part morning and evening with force, till they are deſtroyed; which will be in a few days, if they are taken in time.

WHEN the crop is over, or thereabout,

about, increaſe the waterings with the engine to four or five times a-week: where the fruit are all off, drive the water on the trees with force. In wet dark weather, water them only once or twice a-week; which will be as often as neceſſary.

THESE waterings muſt be continued till the wood for next year's crop is perfectly ripe.

## CHAP. IV.

### *On a Forcing-houſe with the Flues all in the Back-wall, and the Management of late Peaches and Nectarines.*

WHERE there is no flue but the one in the back-wall, it ſhould run three times along it; and the bottom of the firſt ought to be ten inches above the border. This flue muſt be three feet deep; and the face of it built with bricks of the common ſize, four inches and an half in breadth. Between the firſt and ſecond flues there muſt be about one foot of ſolid building. The ſecond muſt be two feet and an half deep, the bricks for the face of it three inches and three-fourths in breadth, and the covering ſeven inches thick. The third or uppermoſt ſhould be two feet deep, and the bricks for the face of it three inches broad. If the flues are built in this manner, one fire is ſufficient for forty-five feet in length. The forcing-houſe ſhould be ſix feet wide; and the wood-work of it the ſame with the one for early forcing: only it will not be ſo ſuitable for that purpoſe, as if there was a flue in front; but every other way will anſwer equally well. All the difference in the management of the trees in ſuch a houſe as this, is, that they will require to be oftener watered with the engine while fire is continued, as the ſteam will not ariſe ſo ſtrong from the back as the front flue.

In order to have good late fruit, put on the ſaſhes when the petals begin to expand; and when the weather is tolerably moderate, pull them ſo far down that their low ends may reſt on the walk, and ſhut them cloſe in the evening. Make no fire if the weather is not ſevere: if it is, and the mercury ſo low as 40° in the evening, make ſo much fire as to keep it between 36° and 42° through the night.

In thoſe nights that fire is uſed, after the flues are a little warmed, give the trees a light watering all over twice a-week, during the time they are in flower; which, in place of hurting the fecundating farina of the antheræ, (as given out by ſome gardeners), promotes the ſetting of the fruit.

When the trees are out of flower, and the leaves expanding, increaſe the waterings with the engine to three or four times a-week, more or leſs according to the weather; as there ſhould be no fire but in ſharp froſt, the watering ſhould not be repeated ſo often as where a briſk fire-heat is kept up.

When the fruit are about the ſize of ſmall horſe-beans, lay away the ſaſhes, if the ſharp froſts are gone: ſlight froſt will do no hurt to the fruit, if they are brought forward in the hardy manner directed.

This cannot be called forcing, being only protecting the bloſſoms and fruit in their infant-ſtate from too ſevere froſt, which often happens during the time peach and nectarine trees are in bloom, and their fruit ſetting in the natural way.

After the ſaſhes are taken off, if the nights are a little froſty, water the trees in the forenoon. When the froſts are gone, water them four or five times in the week, between four and ſix in the afternoon, if the weather is dry: if it is the reverſe, half this watering will ſerve.

In hot drying days, watering in the evening is of great ſervice, not only in preventing the breeding of inſects, but in promoting the growth of the trees and fruit; which ſhould be thinned as directed for them when early forced, and the trees managed in the ſame manner, except with the differences mentioned.

In the laſt week of September, (ſooner or later according to the weather), put on the ſaſhes again, before ſharp, froſty, or cold wet nights commence. In moderate days, pull them ſo far down, that their low ends may reſt on the walk; ſhut them cloſe in the evening, make a little fire, and increaſe it as the long cold nights advance.

Some may imagine that it is unneceſſary to be at ſo much expence, as late peaches can be got towards the end of September and in October, from a good aſpect and common wall: but ſuch fruit, although ſoft, have ſeldom any flavour; whereas thoſe managed in the way directed will be large, well flavoured, and always a good crop.

But, unleſs where the forcing of theſe fruits is extenſive, it is more proper to have them ripe in July and Auguſt; in theſe months, they can be got in the greateſt perfection, and with the leaſt expence.

However, where it is intended to have them ſo late as October, the following ſorts are moſt proper for the purpoſe, viz.

### PEACHES.

Teton de Venus,
Rambouillet or Rambullion, and
Nivette.

### NECTARINES.

Newington, and
Red Roman.

As the trees are not ſo liable to be infected with vermine in autumn as in the ſpring and ſummer months, give them no water in dark ſoft weather after the middle of September; if it is the reverſe, give them a light watering all over in the afternoon, once in four or five days, till the fruit are come in for gathering, when the watering muſt be omitted (if the red ſpiders don't make their appearance) till the crop is finiſhed; they ſhould then be watered twice in the week, and a little fire continued till the wood is ripened, and the leaves near all dropt: the fire-heat muſt then be given over; and ten or twelve days after, take off the ſloping ſaſhes.

At the ſame time, prune the trees in the manner directed for thoſe in the early forcing-houſe, and dig the border.

# CHAP. V.

## *On the Conſtruction of Hot-walls, and the Management of the Trees without Glaſs.*

IN the building of all uncovered hot-walls intended for peaches, nectarines, figs, &c. obſerve the following directions.—A wall ten feet high ſhould have one fire to forty feet in length, *i. e.* to four hundred ſquare feet. The firſt flue ought to be three feet deep, and the bottom of it ten inches above the border: the face of this flue ſhould be built with bricks of the common ſize, four inches and an half in breadth. Between the firſt and ſecond flue there muſt be ſeven inches of ſolid building. The ſecond flue ought to be two feet and an half deep, the bricks for the face of it three inches and three-fourths in breadth, and the covering five inches thick. The third or uppermoſt ſhould be two feet deep, the bricks for the face of it three inches broad; with eight inches of ſolid building above it. All the bricks for the faces of theſe flues, although differing in breadth, ought to be the ſame in thickneſs and length.

A HOT-WALL, conſtructed according to this method, will be regularly warmed by ſmall fires from bottom to top.

PEACH and nectarine trees, to remain for good, ſhould be planted againſt theſe walls twenty feet ſeparate, in ſuch prepared borders as directed for the forcing-houſe: and in order to have fruit ſoon, one tree in a bearing ſtate may be planted between every two of them. As the young trees advance upon the bearing ones, cut off the branches of the latter from time to time to make room for them, and at laſt take them up altogether.

THE moſt proper time to apply the fire-heat, is when the bloſſoms begin to open. If there is a little ſun, and the weather mild, when the trees are in bloom, ſmall fires in the night will ſerve.

WHEN the weather is the reverſe, continue fire through the day: but no more than what is neceſſary to keep up ſuch a warmth, as a common ſouth-aſpect brick-wall acquires by the ſun ſhining full on it in the month of April or early in May. When this is the caſe, give the trees a light watering all over with the engine, three times in the week, before noon.

If the weather is mild and moiſt, and only weak fires requiſite in the night, delay watering till a few of the leaves are expanded; at which time it muſt be ſet about, otherwiſe the young leaves will be infected with the aphis, and the trees will receive an early check. This is the firſt inſect that breeds on them; and of itſelf is often the deſtruction not only of the crop, but alſo of the trees.

In order to keep free of theſe inſects, with others that would make their appearance when warm weather commences, drive the water with force over the trees, when the fruit are all ſet; before that time, it ought to be thrown very lightly over them. Let this be done three or four times in the week, even if the nights are cold and froſty; as a proper warmth in the wall will prevent the trees, leaves, and young fruit, from being hurt by ſuch froſts as generally happen in March and April.

Trees nailed to an uncovered hot-wall, are in more danger of being hurt by its being over-heated, (which error an unexperienced gardener is liable to fall into), than thoſe planted in forcing-houſes, and trained to a trellis: however, too ſtrong fire-heat muſt be guarded againſt in regard to either. In the latter, the thermometers are of ſervice in regulating the heat: but on the former, they are of no uſe.

The perſon who has the management of theſe hot-walls, when fires are uſed, muſt often examine the heat in them; which at no time ought to be ſo ſtrong as he cannot lay his hand againſt the flues for eight or ten minutes together, without the leaſt uneaſineſs by the heat.

When the cold nights are gone, the fires ought to be given over; only in dark weather a little fire will be neceſſary to continue a warmth in the wall.

In dry ſunſhine weather, the trees ought to be watered five or ſix times a-week in the evening, which will keep them perfectly free from inſects.

The thinning of the fruit and the dreſſing of the trees ought to be performed in the manner directed for the early forced ones.

When the fruit begin to ripen, give over watering. If there ſhould be froſty nights, or dark moiſt weather, when the fruit are ripening and in gathering, continue a moderate warmth in the wall, which will be of ſervice to the flavour of the fruit.

THE fire-heat muſt not be given over altogether before the trees are done growing, and the leaves near about all dropt: at which time the wood will be properly prepared for next year's crop. It muſt be obſerved, that in dry weather, after the fruit are all gathered, the trees ought to be watered twice a-week.

WHEN the leaves are about all dropt, the trees ſhould have their autumn dreſſing, as directed for the early forced ones, by thinning them, if there is too much wood, and nailing the beſt ſhoots to the wall from ſix to eight inches ſeparate.

The extent of the hot-wall that I have recommended, viz. four hundred ſquare feet, is as much as ought to be allowed to one fire, if the bottom of the border is of a cold clayey nature, and the ſituation unfavourable: but in warm ſituations, and where the bottom is ſand or gravel, one fire will ſerve five hundred ſquare feet; if the flues are built in the manner, and with ſuch bricks as directed in the beginning of this chapter. Where a wall exceeds ten feet in height, *i. e.* from ten to fourteen, there ſhould be four flues in the height.

There are but few places in Britain where the following fine late pears come to perfection in the natural way, viz. Creſſane, Colemar, and winter Bon Chretien; this laſt grows to a large ſize, and is allowed to be a remarkable fine pear. Theſe three kinds are deſerving of a hot-wall, on which they will ripen early in September, by keeping up ſuch a warmth in it as directed for the peaches. The fire heat ſhould be applied when the bloſſoms are near expanded.

I HAVE ſeldom known theſe trees to be infected with vermine: nevertheleſs, after the fruit are formed, water them all over with the engine twice a-week in dry weather, which will greatly promote the growth of the trees and fruit. Suffer no more ſhoots to be produced, than what appear neceſſary to lay to the wall; and theſe ſhoots ought to be eight or nine inches ſeparate.

WHERE figs are planted againſt a hot-wall, the ſhoots ſhould be ten or eleven inches ſeparate, their leaves being very large.

IT is natural for the fig-tree to produce two crops in one year; the firſt from the laſt year's wood, and the ſecond from the ſame ſummer's ſhoots: the ſecond never ripens in Britain in the natural way, and in many places the firſt does not; but in a forcing-houſe, both crops will ripen.

All walls intended for peaches, nectarines, figs, and the fine late pears, ought to be flued; otherwiſe the crops will be very uncertain. Such of theſe fruits as ripen on common walls in moſt places, are of little or no value; owing to the want of ſun, long nights, and raw froſts; by which they are prevented from acquiring that agreeable taſte and flavour, which they would be poſſeſſed of were they ripened by the methods mentioned.

Certain it is, that a few of the

earlieſt ſorts of peaches ripen and are good on common walls, in favourable ſituations and fine ſeaſons: yet, even in the moſt ſuitable places, the crop is uncertain; if there is a middling crop one year, moſt likely there will be next to none for a year or two to come.

## CHAP. VI.

### *On forcing Peaches, Nectarines, &c. without Flues in the Back, and keeping thoſe on common Walls free of Inſects.*

WHERE there is a good brick or ſtone wall about eleven or twelve feet in height, and furniſhed with ſuch ſorts of peach and nectarine trees as are recommended in Chap. II. a forcing-houſe may be erected upon it, without diſturbing the trees, by conducting the flues in the following manner.—If the fruit are not required before the middle of June, two fires will be ſufficient for an hundred feet in length. The furnaces ſhould be placed behind the middle of the back-wall; and the flues ought to run along the ſurface of the border, in the manner directed Chap. I. and to return in the ſame way, the ſecond being cloſe by the ſide of the firſt, making a double flue: both the firſt and ſecond ſhould be eleven inches deep, the firſt eight inches wide, and the returning one ſeven. They ought to be ſeparated by bricks laid in bed, and bricks on edge will be ſufficient for the other ſide of the returning flue: the two vents for the ſmoke ſhould be in one building, behind the middle of the back-wall, between the two furnaces. Theſe flues ſhould be built on arches ſupported by ſmall pillars, the tops of which arches ſhould be no higher than the ſurface of the border.

THE wood-work of this forcing-houſe, (which ought not to exceed ſeven feet in breadth), ſhould be the ſame with the one mentioned Chap. I. only there will be no occaſion for a trellis, as there are no flues in the back-wall.

THE two diviſions may be forced

alternately; for which purpoſe ſaſhes will only be needed for one half of the length, which muſt fit both diviſions.

THE forcing ſhould be managed in the following manner.—In the firſt week of January, put the ſaſhes on one diviſion, and light the fire at the ſame time: the degree of heat, and the giving of air, ought to be the ſame with what is directed in Chap. II.

WHEN the weather is ſuch, that pretty briſk fires are neceſſary, raiſe a thick ſteam in the houſe, twice or thrice in the twenty-four hours, and let it be the laſt work that is done in the night: but the trees muſt not be watered with the engine in the days that it is performed, as they are not ſo liable to be infected with the red ſpider where there are no flues in the back-wall.

When this ſteaming work cannot be performed, water the trees all over with the engine, as directed for the other forcing-houſes.

The crop will be over early in Auguſt, and ſoon after the wood for next year will be ripened: at which time the ſaſhes muſt be taken away, and placed on the other diviſion.

If the weather is dark, apply the fire-heat: but raiſe no ſteam when the fruit are ripe and in gathering.

The fire muſt not be given over till the trees have finiſhed their growth, and the leaves moſtly all dropt; which (as has been mentioned) ought to be aſſiſted by ſweeping off, with a ſoft broom, ſuch as part eaſily from the wood. Likewiſe there ſhould be wooden walks in all the forcing-houſes, with moſs below the trees when the fruit are ripening.

The trees in the diviſion that was forced the preceding year, will naturally come ſooner into flower than if they had not been forced; and by their wood being properly ripened, their bloſſoms will be ſtrong, and not ſo liable to ſuffer by bad weather as flowers produced from unforced trees. However, if the weather happens to be ſevere when they are in bloom, they can eaſily be protected by ſtretching baſs-mats along the rafters.

PEACH and nectarine trees on common walls, in moſt places, ſuffer by the aphis immediately after the leaves appear; and at that ſeaſon there are often ſharp froſts in the night; on account of which the trees cannot be ſo freely watered as to prevent the breeding of inſects: when this is the caſe, water them with the engine early in the forenoon; if in ſunſhine, ſo much the better. They muſt not be watered when in flower: but when the froſts are gone, water them three or four times a-week in the afternoon with force.

LAY only a few more young ſhoots to the wall than what appear neceſſary for the following year; only ſuch as are produced at the fruit, ſhould remain till they have got ſix or ſeven leaves, when they ought to be ſtopt by taking off a little of their tops: when the trees are pruned in the autumn, theſe (as well as thoſe in the forcing-houſes) ſhould be all cut off.

If the ſhoots of peach and nectarine trees on common walls were kept ſo thin as to be about eight or nine inches ſeparate, the walls would acquire a greater degree of heat by the ſun, and the wood and fruit would have better chance to ripen, than where there is ſo much of the young wood laid to the wall in the ſummer dreſſing as only to be three or four inches ſeparate.

## CHAP. VII.

### *On Vines.*

WHAT vines are planted in the early peach forcing-houſe, ought to be of the ſmall kinds which ripen ſooneſt. If the bottom of the border is of a cold clayey nature, (that being very unfavourable for grapes), they muſt be planted againſt the trellis on the back-wall, run up with ſingle ſhoots to the rafters, and be trained down them. They ought not to be on all the rafters, only on every other one at moſt.

Suffer no fruit to be produced, but from the ſhoots on the rafters, and not above two ſhoots from one vine, otherwiſe the peach and nectarine trees would be too much ſhaded.

While the air of the houſe is kept moiſt, by often ſteaming and watering in favour of the peach and nectarine trees, the red ſpider will be prevented from breeding on the vine-leaves, and the growth of the grapes will be encouraged. Before they are near ripe, the ſteaming ſeaſon will be over, and the vines being on the rafters and near the glaſs and air, the trees on the trellis can be watered without hurting the grapes.

With regard to the raiſing of the vines, planting, pruning, &c. ſo much has been publiſhed by others of late years on that ſubject, that I think it unneceſſary to give any further directions than for keeping them free of inſects, at leaſt till the fruit are full grown and beginning to ripen. For which purpoſe, the flues in a grape-ſtove ſhould be built in the manner directed Chap. VI. Two of theſe double flues ought to run from end to end of the houſe; the firſt three feet from the front, and the ſecond about one foot from the back-wall. If this grape-ſtove is fifty feet in length, twelve feet high in the back, and twelve feet wide; it muſt have two furnaces.

It is not adviſeable to water the vines with the engine when in flower and fruit: but by ſteaming them as directed for peaches and nectarines in the early forcing-houſe, they will thrive finely; and as the grapes require a ſtronger fire-heat than any other fruits, the ſteaming can be better performed. It ought to be begun when the fire-heat is applied, and continued five or ſix times in the week, till the fruit are full-grown and beginning to ripen; when it muſt be omitted, and the grape-houſe kept dry: when it is not ſhut up with a ſtrong ſun-heat, make a little fire. A briſk fire-heat hurts the flavour of peaches and nectarines when ripening and ripe; but promotes that of grapes, if plenty of air is admitted in the day.

FINIS.

MVSEVM
BRITAN
NICVM